

WE CLAIM:

1. A method comprising:
providing a thermally conductive heat spreader body having a first surface configured to thermally couple the heat spreader to an IC die; and
coating the first surface with an organic surface protectant.
2. A method as claimed in claim 1, wherein the coating step comprises immersing the heat spreader body in a dipping solution comprising the organic surface protectant.
3. A method as claimed in claim 1, wherein the organic surface protectant comprises one or more triazole compounds and/or salts thereof.
4. A method as claimed in claim 1, further comprising providing the coated first surface with a layer of a thermal interface material, and thermally coupling the IC die to the heat spreader body via the thermal interface material.
5. A method as claimed in claim 4, wherein the thermal interface material is a solder or solder-polymer hybrid.
6. A method as claimed in claim 1, wherein the first surface of the heat spreader body is coated with an intervening layer before coating with an organic surface protectant.
7. A method as claimed in claim 1, wherein the body comprises copper.

8. A heat spreader for an IC circuit package, comprising:
a thermally conductive heat spreader body having a first surface configured to thermally couple the heat spreader to an IC die; and
a coating of organic surface protectant on the first surface.
9. A heat spreader as claimed in claim 8, wherein the body comprises copper.
10. A heat spreader as claimed in claim 8, wherein the organic surface protectant is applied by dipping or spraying onto the first surface.
11. A heat spreader as claimed in claim 8, wherein the organic surface protectant comprises one or more triazole compounds or salts thereof.
12. A heat spreader as claimed in claim 8, wherein the coating completely envelops the body.
13. An IC package, comprising:
a package substrate;
an IC die attached to the substrate;
a heat spreader body having a first surface thermally coupled to the IC die;
and
a coating of organic surface protectant disposed between the first surface and the IC die.
14. An IC package as claimed in claim 13, wherein the coating completely envelops the body.

15. An IC package according to claim 13, further comprising a thermal interface material between the IC die and the coated first surface of the heat spreader.

16. An IC package according to claim 15, wherein the thermal interface material is a solder or solder-polymer hybrid.

17. An IC package according to claim 13, wherein the body comprises copper.

18. An IC package according to claim 13, wherein the organic surface protectant comprises one or more triazole compounds or salts thereof.

19. An IC package according to claim 13, wherein the organic surface protectant is in indirect contact with the first surface.

20. A printed circuit board assembly comprising:
a printed circuit board,
an IC die electronically coupled to the printed circuit board, and
a heat spreader body having a first surface thermally coupled to the IC die;
and
a coating of organic surface protectant disposed between the first surface and the IC die.

21. A printed circuit board assembly as claimed in claim 20, further comprising a thermal interface material between the IC die and the coated first surface of the heat spreader, wherein the thermal interface material is a solder or solder-polymer hybrid.

22. A printed circuit board assembly as claimed in claim 20, wherein the IC die is directly attached to the printed circuit board.

23. A printed circuit board assembly as claimed in claim 20, wherein the IC die is attached to a package substrate that is attached to the printed circuit board.